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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/942,595      | 08/31/2001  | Gerard Henri Martin  | PET-1952            | 7456             |

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EXAMINER

VANOY, TIMOTHY C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1754     |              |

DATE MAILED: 07/07/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

|                 |            |                |               |
|-----------------|------------|----------------|---------------|
| Application No. | 09/942,595 | Applicant(s)   | MARTIN ET AL. |
| Examiner        | VANOY      | Group Art Unit | 1.754         |

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

date-stamped JUNE 5, 2003

Responsive to communication(s) filed on JUNE 5, 2003

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

Claim(s) 1 AND 3-21 is/are pending in the application.

Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

Claim(s) 7-14 AND 16-18 is/are allowed.

Claim(s) 1, 3-6, 15 AND 19-21 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

Application Papers date-stamped JUNE 5, 2003 are

The proposed drawings/correction, filed on JUNE 5, 2003 is  approved  disapproved.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All  Some\*  None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

Interview Summary, PTO-413

Notice of Reference(s) Cited, PTO-892

Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948

Other \_\_\_\_\_

## Office Action Summary

## DETAILED ACTION

### *Oath/Declaration*

a) It is not clear if the applicants are claiming the benefit of the filing date of 60/186,300 set forth in the oath.

*The applicants have set forth that 60/186,300 is the priority document for 09-790,873 and 10-370,471, however this objection is maintained because the first sentence to the specification does not claim benefit of 60/186,300, and the serial no. of this application is 09-942,595 – yet the oath mentions 60/186,300.*

### *Drawings*

a) The corrected or substitute drawings date-stamped June 5, 2003 are approved.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-6, 15 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 5,216,966 in view of AT 399 214 B.

The figure and the description of the figure set forth in col. 2 Ins. 49 et seq. in U. S. Pat. 5,216,966 illustrates and describes the base process for removing sulfur dioxide from the flue gas emitted from the combustion of a sulfur-containing fuel (please see col. 1 Ins. 8-11 and Ins. 58-60), comprising:

- a) burning a sulfur containing-fuel in a combustion chamber 1 to produce a flue gas at a temperature ranging from 800 to 2,000 °C, wherein the apparatus is also equipped with a heat exchange zone 10 (which extracts the heat from the flue gas);

- b) passing the sulfur dioxide-contaminated flue gas through a space 61 for supplying the flue gas to desulfurization zone 6;
- c) injecting sorbent 8 into the sulfur dioxide-contaminated flue gas;
- d) passing the sulfur dioxide-contaminated exhaust gas into the desulfurization zone 6 (where the gas is scrubbed with injected sorbent to produce a desulfurized flue gas and a spent sorbent);
- e) passing the flue gas and a portion of the entrained sorbent through heat exchange zone 10, where heat is extracted from the flue gas;
- f) passing the flue gas and a portion of the entrained sorbent through a gas/solid separator 13, which separates the sorbent 132, 133 from the flue gas 14.

Also, note that the abstract of U. S. Pat. 5,216,966 mentions a means (32) for regenerating the used sorbent and the figure in U. S. Pat. 5,216,966 shows means (44) for recycling the regenerated sorbent back to the gas scrubbing vessel (6), in a manner set forth in applicants' claims 3 and 19-21.

The difference between the applicants' claims and U. S. Pat. 5,216,966 is that the applicants' claims also call for the provision of an internal recycle of a sulfur oxides of sulfur adsorbent (please see claim 1 step (b), for example) and the applicants' independent claim has been further limited to recite: "said desulphurization apparatus comprises a peripheral zone for recycling adsorbent, an intermediate desulphurization zone into which fumes enter tangentially, and a central zone for evacuating fumes".

The figure illustrated in AT 399 214 B illustrates the same claimed arrangement for internally recycling sulfur oxides sorbent, and also a desulfurization apparatus

comprising a peripheral zone for recycling adsorbent, an intermediate desulphurization zone into which fumes enter tangentially, and a central zone for evacuating fumes. Pg. 2 Ins. 39-48 explains that the advantage of such integration of a fluidized bed of circulating sorbent next to the reaction zone allows the reaction material to be used over and over, and raises the efficiency of the using the reaction material from only 60 percent to over 90 percent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the reaction chamber/circulating fluidized bed arrangement illustrated in figure 1 in AT 399 214 B *in lieu* of the reaction chamber and circulating fluidized bed arrangement illustrated as features 6 and 13 in the figure illustrated in U. S. Pat. 5,216,966 into the process described in U. S. Pat. 5,216,966, in the manner that would meet the limitation calling for the provision of an internal recycle of a sulfur oxides adsorbent (please see claim 1 step (b), for example) and the limitation set forth in the applicants' independent claim: "said desulphurization apparatus comprises a peripheral zone for recycling adsorbent, an intermediate desulphurization zone into which fumes enter tangentially, and a central zone for evacuating fumes", because of the expected advantage of improving the efficiency of the circulating reaction material from only 60% to over 90%, as fairly suggested in the disclosure set forth on pg. 2 Ins. 39-48 in AT 399 214 B.

Note that col. 3 Ins. 13-16 in U. S. Pat. 5,216,966 discloses that the size of the sorbent grains range from 0.1 to 200 micrometers, in a manner meeting the limitations of applicants' claim 15.

Claims 7-14 and 16-18 have not been rejected under either 35USC102 or 35USC103 because the limitations in these claims are not expressly taught in U. S. Pat. 5,216,966, and not do they appear to be taught in AT 399 214 B.

***Response to Arguments***

The Applicants' arguments with respect to the pending claims have been considered, but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 8 hr. days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Art Unit: 1754

Timothy Vanoy/tv  
July 2, 2003

*Timothy Vanoy*  
Timothy Vanoy  
Patent Examiner  
Art Unit 1754